

**Remarks**

Claims 1-18 are pending in the application.

No claims are amended herein.

In the Office Action mailed 26 February 2008, the Examiner rejected claims 1-18 (all pending claims). In response to the office action, Applicants respectfully traverse the rejections, for at least the following reasons. In light of the following arguments and facts, Applicants respectfully submit that the rejections should be withdrawn, and request that all pending claims and this application be allowed.

**Rejections over Prior Art**

In the Office Action, the Examiner rejected claim 1 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,930,164 issued to Zhu (Zhu '164) in view of U.S. Patent No. 6,765,823 issued to Zhu et al (Zhu '823). Applicants respectfully traverse the rejection and submit that the Office Action failed to state a proper *prima facie* case of obviousness. To make an obviousness rejection, an examiner must provide evidence of the state of the prior art, the difference between the state of the art and the claimed invention; and must provide a detailed explanation of how and why one skilled in the art would modify the prior art to arrive at the invention. See *KSR International Co. v. Teleflex Inc.*, 550 U.S. \_\_\_, \_\_\_, 82 USPQ2d 1385, 1395-97 (2007). See also *Graham v. John Deere Co.* 383 U.S. 1, 148 USPQ 459 (1966). Applicants respectfully submit that, in the present case, the Examiner has not provided prior art that teaches all the elements of the claimed invention or all the elements that can be reasonably modified to do so, as is required by law.

In particular, Claim 1 recites a memory cell that includes a first hard magnetic layer, a second hard magnetic layer, a first soft magnetic layer, and a second soft magnetic layer. Zhu '164 does not teach a memory cell including the above components. Instead, Zhu '164 teaches a MRAM unit 10 that includes two memory cells, i.e., a first memory cell 11 and a second memory cell 12. See Col. 2, lines 34-35. The first memory cell 11 includes a first pinned magnetic layer 111 and a first free layer 112. See Col. 2, lines 41-42. The second memory cell includes a second pinned magnetic layer 121 and a second free layer 122. See Col. 2, lines 52-53. Thus, Zhu '164 teaches two individual memory cells that have two magnetic layers in each cell. On the other hand, the memory cell of claim 1 includes four magnetic layers. Furthermore, the configuration of the

memory cell in Zhu '164 is for a current-in-plane structure whereas the structure of the memory cell recited in claim 1 is a current-perpendicular-to-plane structure. Thus, Zhu '163 does not teach or suggest a memory cell such as that recited in claim 1.

Zhu '823 also does not teach or suggest the structure such as that recited in claim 1. As with Zhu '164, Zhu '823 teaches a memory cell with two magnetic layers, i.e., the free magnetic layer 64 and the pinned magnetic layer 66. See Figure 8. See also Col. 9, lines 29-39. Thus, the invention recited in Zhu '823 also relates to a current-in-plane structure which, as is known in the art, faces different problems than the current-perpendicular-to-plane structure of the memory cell recited in claim 1. Thus, Zhu '823 does not teach or suggest the structure recited in amended claim 1.

Since neither Zhu '164 nor Zhu '823, nor any reasonable combination thereof, teaches a memory cell as recited in claim 1, there is no reasonable, possible manner in which the two references can be combined to form the memory cell recited in claim 1. For these reasons, Applicants respectfully request that the rejection of claim 1 be removed and claim 1 be allowed.

Claims 2-11 depend from claim 1. Thus, claims 2-11 include the same structure recited in claim 1 and are allowable over the cited for at least the same reasons set forth with regards to claim 1. Therefore, Applicants respectfully request that the rejections of claims 2-11 be removed and claims 2-11 be allowed.

Claim 12 recites a memory device having substantially the same structure as the memory cell recited in claim 1. Thus, claim 12 is allowable for at least the same reasons as claim 1. Therefore, Applicants respectfully request that the rejection of claim 12 be removed and claim 12 be allowed.

Claims 13-18 depend from claim 12. Thus, claims 13-18 include the same structure recited in claim 12 and are allowable over the cited for at least the same reasons set forth with regards to claim 12. Therefore, Applicants respectfully request that the rejections of claims 13-18 be removed and claims 13-18 be allowed.

For the above reasons, Applicants respectfully request that all pending claims and this application be allowed. If the Examiner has any questions regarding this response or the application in general, the Examiner is invited to contact the undersigned.

**Conclusion**

In view of the foregoing remarks, and in view of the presently pending claims, it is respectfully submitted that all of the claims presently in the application fully patentably distinguish over the prior art and are in condition for allowance. Notice to such effect is respectfully requested.

In the event issues arise as a result of the filing of this paper, or remain in the prosecution of this application, Applicants request that the Examiner telephone the undersigned attorney to expedite allowance of the application.

Should a Petition for Extension of Time be necessary for the present Reply to the outstanding Office action to be timely filed (or if such a petition has been made and an additional extension is necessary) petition therefor is hereby made and, if any additional fees are required for the filing of this paper, the Commissioner is authorized to charge those fees to Deposit Account #18-0988, Docket No. ALLNP0105US.

Respectfully submitted,  
RENNER, OTTO, BOISSELLE & SKLAR, LLP

By /thomaswadams/  
Thomas W. Adams  
Reg. No. 35047

1621 Euclid Avenue  
Nineteenth Floor  
Cleveland, Ohio 44115  
(216) 621-1113